Amendments to the Title:

Please amend the title of the invention to read, as follows.

DEVELOPING APPARATUS FEATURING FIRST AND SECOND DEVELOPING MEMBERS PROVIDED IN FIRST AND SECOND TONER CONTAINER CHAMBERS, RESPECTIVELY

Amendments to the Specification:

Please amend the paragraph starting at page 1, line 27 and ending at page 2, line 4 to read, as follows.

In this color image forming apparatus, an image processing means is constituted of a photosensitive drum 1 serving as an image carrier, a primary charger 2 as a charging means, a laser scanner 3 providing image information, a rotary type developing apparatus 5 supporting developing devices 4a, 4b, 4c, 4d as four developing means, an intermediate transfer body 6, and a cleaning apparatus 7 collecting remaining transfer ~~remaining~~ toner.

Please amend the paragraph starting at page 2, line 9 and ending at page 2, line 14 to read, as follows.

The rotary type developing apparatus 5 is of a type settling one of four developing devices 4a to 4d to a developing position according to the rotation of a supporting body 9. The rotary type developing apparatus 5 has development opening surfaces for the respective developing devices 4a to 4d on a circumference of a circle whose center is at a support body rotary shaft 8.

Please amend the paragraph starting at page 3, line 3 and ending at page 3, line 14 to read, as follows.

Referring to Fig. 4 and Fig. 5, the developing device positioning apparatus for the rotary type developing apparatus in Fig. 3 is described. Numeral 20 denotes a photosensitive drum; numeral 21 denotes a supporting ~~support~~ body of a rotary type developing apparatus 22; numeral 23 denotes a developing device. The developing device

23 has mounted therein ~~is mounting~~ a first developing roller 24 and a second developing roller 25. The developing device 23 is installed movably on a developing guide 26. The developing guide 26 is set so that the first developing roller 24 and the second developing roller 25 are movable parallel with [[to]] the surface of the photosensitive drum 20 up to coming closer in a prescribed amount. Numeral 27 is a positioning cam and moves [[move]] pivotally around a pivotal shaft 28. A roller 29 is disposed rotatably at a tip thereof.

Please amend the paragraph starting at page 3, line 22 and ending at page 4, line 3 to read, as follows.

In Fig. 5, a part of a container 30 hits a hitting member, not shown, of the supporting body 21 to cease the developing device 23, so that the developing device 23 is held as it is according to a holding force of the positioning cam 27. In [[With]] this state, the first developing roller 24 and the second developing roller 25 of the developing device 23 can come closer to the prescribed amount such that the electrostatic latent images on the photosensitive drum 20 can be properly developed. The prior art has a structure that this prescribed amount is in a range from 200 microns to 400 microns.

Please amend the paragraphs starting at page 4, line 6 and ending at page 6, line 6 to read, as follows.

The photosensitive drum 1 is rotated in arrow A direction, and the primary charger 2 charges the photosensitive drum 1 uniformly. Exposure 13 by the laser scanner 3 then forms electrostatic latent images on the photosensitive drum 1. These latent images are

corresponding to color developing agent developers in the developing devices 4a to 4d, or namely respective colors such as yellow (Y), magenta (M), cyan (Y), and black (Bk).

Regarding to the first color, the electrostatic latent image corresponding to, e.g., the yellow developer is formed on the photosensitive drum 1, and the image, after being visualized with the known process among the developer rollers ~~carriers~~ 10a, 11a of the developing device 4a in which the yellow developer is contained, and the photosensitive drum 1, is transferred with a first transfer roller 14 to the intermediate transfer body 6.

Subsequently, after the remaining toner on the photosensitive drum 1 is cleaned up with the cleaning apparatus 7 such as a blade or the like, the electrostatic latent image corresponding to, e.g., the developer, as the second color, is formed on the photosensitive drum 1, and the image, after being visualized with the known process among the developer rollers 10b, 11b ~~carriers 10a, 11a~~ of the developing device 4b [[4a]] in which the magenta developer is contained, and the photosensitive drum 1, is transferred in an overlapping manner with the first transfer roller 14 to the intermediate transfer body 6 to which the yellow visualized image of the first color is transferred.

After the above operations are done in a plural number, the toner overlapped as plural layers on the intermediate transfer body 6 is transferred onto a transfer material 102 [[P]] as described below.

Hereinafter, the step that the toner of the plural layers on the intermediate transfer body 6 is transferred onto the transfer material 102 [[P]] is described.

A transfer material 102 stacked on a [[the]] cassette 101 in Fig. 3 is fed out with a pickup roller 103, and the topmost transfer material P2 is solely transferred on a downstream side by a feeding roller 104 and a reverse separation roller 105 rotating in the

reverse direction to the feeding direction. The transfer material P2 is then conveyed along a [[the]] conveyance path by plural conveyance roller pairs 106, and is bent upon the front end's engagement with a nipping portion of a stopped registration roller pair 107, thereby being corrected from obliquely feeding.

The registration roller pair 107 begins rotating at a timing synchronized with a toner image formed on the intermediate transfer body 6, thereby feeding out the transfer material 102. ~~material.~~ The fed transfer material 102 enters in the nipping portion formed with the intermediate transfer body 6 and a second transfer roller 108, and the toner image on the intermediate transfer body 6 is transferred to the transfer material (P1 in Fig. 3).

The transfer material P1 is then conveyed with a conveyance belt 109 to a fixing apparatus 110 made of two rollers, located on upper and lower sides. The toner image on the transfer material P1 at the fixing apparatus 110 is fixed to the transfer material P1, ~~material,~~ and is delivered to a delivery tray 112 via [[a]] delivery rollers ~~roller~~ 111.

Such a color image forming apparatus has been proposed as an example of a color image forming apparatus particularly for higher image quality than the usual image quality. Such an apparatus has a feature that each of the four-color developing devices contained in the rotary body has ~~is mounting~~ two developing rollers. Described herein as an example of such an apparatus feature is that the four-color developing devices contained in the rotary body have the same shape and the same mass and are disposed equally with 90 degrees spaced with respect to a rotary center of the rotary body.

Please amend the paragraphs starting at page 6, line 8 and ending at page 6, line 23 to read, as follows.

Fig. 6 and Fig. 7 show two states taken by the developing device in a [[the]] rotary body 40. In Fig. 7, numeral 41 shows a photosensitive drum, and Fig. 7 shows a situation that the electrostatic latent image on [[of]] the photosensitive drum 41 is developed by an developer of a [[the]] developing device 42. The rotary body 40 has a structure to rotate by each of 90 degrees in the counterclockwise direction (arrow D in the drawing). Fig. 6 shows the state that the rotary body 40 is located at a position of –90 degrees in the rotational direction of the rotary body 40 (rotational direction of the rotary body 40 is defined as "+") with respect to the developing position shown in Fig. 7.

With [[In]] reference to Fig. 6, an internal structure of the developing device 42 is described. The developing device 42 has a first developing roller 44 and a second developing roller 45, and each of the developing rollers 44, 45 has a first developing sleeve 4b and a second developing sleeve 47, ~~sleeve,~~ which are in a rotatable state with a drive mechanism, not shown, and a first magnet roller 48 and a second magnet roller 49 stationally formed at respective centers of the developing rollers 44, 45. ~~rollers.~~

Please amend the paragraph starting at page 6, line 27 and ending at page 7, line 6 to read, as follows.

In the developing device 42, a [[the]] first screw 50 and a [[the]] second screw 51 are disposed. A diaphragm 53 structured by a part of a container 52 is projected between the first screw 50 and the second screw 51, thereby forming a developing chamber 54 enclosed with the first developing roller 44 and a stirring chamber 55 enclosed with the second developing roller 45, respectively. The opposite ends in the longitudinal direction of the first screw 50 and the second screw 51 are supported with [[to]] bearings, not shown.

Please amend the paragraph starting at page 7, line 10 and ending at page 7, lie 22 to read, as follows.

A situation shown in Fig. 6 is described. As described above, Fig. 6 shows the state of –90 degrees with respect to the developing position, and in this state, the first developing roller 44 and the second developing roller 45 are positioned on a substantially lower side, and therefore, a developer 57 existing in the developing device 42 is deposited as to overlap the first developing roller 44 and the second developing roller 45 by operation of the gravity force as shown with "circle patterns" in Fig. 6. From another viewpoint, the developing 57 developer is attracted by magnetic force of the first magnet roller 48 and the second magnet roller 49 in the first developing roller 44 and the second developing roller 45, and a space including the SS space 56, other than an empty space at an upper portion of the developing chamber 54 and the stirring chamber 55, is filled with the developer 57 by a synergy effect with the above gravity force.

Please amend the paragraphs starting at page 8, line 1 and ending at page 12, line 2 to read, as follows.

Regarding the first screw 50 and the second screw 51, as shown in the drawing in respect with the developer 57 in the developing device 42, the lead and rotational direction of the first screw 50 is set so that the developer 57 is conveyed in a direction toward the front side of the drawing, and similarly, the lead and rotational direction of the second screw 51 is set so that the developer 57 is conveyed in a direction toward the rear side of the drawing. The developing chamber 54 containing the first screw 50 and the stirring

chamber 55 containing the second screw 51 are structured to communicate with each other at the opposite ends in the longitudinal direction.

Referring to Fig. 8, the flow of the developer 57 existing in the developing device 42 is described. Fig. 8 is a schematic view showing a cross section along an axial line extending in the longitudinal direction of a [[the]] developing device 60. Numeral 61 denotes a first screw described in Fig. 6, 7; numeral 62 denotes a second screw; numeral 63 denotes a developing chamber containing the first screw 61; ~~screw;~~ numeral 64 denotes a stirring chamber containing the second screw 62. ~~screw.~~ Numeral 65 denotes a toner hopper for supplying a toner 66 to the developing device 60.

One flow is for equalizing the toner density of the developer in the developing device 60. The toner 66 supplied from the toner hopper 65 is supplied to the developing device 60 from extension 641 of the stirring chamber 64 and conveyed in the stirring chamber 64 in arrow direction of arrows G, H as stirred with the carrier in the stirring chamber 64 and as maintaining the state of the developer. The toner 66 at that time receives further triboelectric charges from adequate stirring with the carrier.

The developer is overly filled at an end 642 of the stirring chamber 64 because the developer is sent to the second screw 62. The end 642 of the stirring chamber 64 is structured with a communication path 67 in communication with the end 632 of the developing chamber 63, ~~chamber,~~ so that overly filled developer enters toward a side of the end 632 of the ~~first~~ developing chamber or first chamber 63.

The first screw 61 of the developing chamber 63 conveys the developer in the ~~first~~ developing chamber or first chamber 63 in a direction of arrow I in the drawing. The developer conveyed in the developing chamber 63 reaches the other end 631 of the

developing chamber 63. ~~chamber.~~ Another communication path 68 in communication with the stirring chamber or second chamber 64 is formed even at the other end 631 of the developing chamber 63, ~~chamber,~~ so that the developer is circulated into a merging portion 643 of the stirring chamber 64 again.

Other flows of the developer are used for a process developing the electrostatic latent image on the photosensitive drum 41 with the developer in the developing device 42. ~~device.~~ This flow is described with reference to Fig. 7.

As shown in Fig. 7, the developer 571 in the developing chamber 54 faces to the first developing roller 44, and a part of the developer 571 conveyed thereto is fed around the surface of the first developing sleeve 46 by magnetic attracting force of the first magnet roller 48 of the first developing sleeve 46, [[44,]] and is carried as a thin layer with a restricting blade 58. The developer 57 develops the electrostatic latent image on the surface of the photosensitive drum 41 according to the rotation of the first developing sleeve 46 and is further conveyed to the second developing roller 45.

As a feature of the magnetic polarity arrangement of the first magnet roller 48 and the second magnet roller 49, the magnetic flux density is made higher at a space between the N1 polarity 481 of the first magnet roller 48 and the S2 polarity 491 of the second magnet roller 49 because the N1 polarity 481 of the first magnet roller 48 and the S2 polarity 491 of the second magnet roller 49 are arranged as opposed to each other, so that transfer of the developer 571 can be done surely from the first developing sleeve 46 [[44]] to the second developing sleeve 47, and so that the toner and the carrier can be prevented from scattered between the sleeves 46, 47. ~~sleeves.~~

The second developing roller 45 carries the developer 571 to the surface of the second developing sleeve 47 in substantially the same manner by the magnetic attracting force of the second magnet roller 49. The developer 571 on the surface of the second developing sleeve 47 performs the second development of the electrostatic latent image on the photosensitive drum 41. Accordingly, the two ~~twice~~ developments with the first developing roller 44 and the second developing roller 45 render the developer 571 entering ~~enter~~ into the stirring chamber 55 in the developing device 42 again in a state that the toner density of the developer 571 is lowered. In the stirring ~~second developing~~ chamber 55, the developer 572 is stirred and conveyed by the second screw 51, exists and merges with the developer 571. ~~developer.~~

In a meantime, as described above, almost all of the space including the SS space 56 is filled with the developer 57 by the synergy effect of the gravity force and the magnetic force of the two magnet rollers 48, 49. ~~rollers.~~

If the rotary body 40 is rotated to a developing position shown in Fig. 7 from this state, the developer 57 in the developing device 42 is located in a range shown with "circle patterns" and "dot patterns" in the drawing.

Regarding [[to]] the developer 571 of "circle patterns" in Fig. 7, as shown as the prior art, while the agent is circulated by the two developing screws 50, 51 in the developing device 42, a part of the agent is carried with two developing rollers 44, 45 to contribute the development of the electrostatic latent image on the photosensitive drum 41. ~~drum.~~

On the other hand, the portion shown with "dot patterns" in Fig. 7 is a portion defined as the SS space 56 in Fig. 6 and is a portion at which the developer 573 is carried

by magnetic force of the two magnet rollers 48, 49. ~~rollers.~~ In this SS space 56, the S2 polarity 482 of the first magnet roller 48 and the N1 polarity 492 of the second magnet roller 49 are arranged as to be opposed to each other, so that the magnetic flux density is made higher between the polarities, and so that the SS space 56 is subject to higher constraint force against the developer 573 by the magnetic force.

The developer 573 is a agent that is circulated into the stirring chamber 55 after the developing operation of the previous time and that is contained in the stirring chamber 55. ~~chamber.~~ That is, the developer 573 is a developer with a reduced toner density, which is entirely different from the developer passing through the restricting blade 58 under the regular process. In the state shown in Fig. 6, the developer enters into the SS space 56. ~~space.~~

The developer 573 carried in the SS space 56 is conveyed to the second developing sleeve 47 [[46]] again as shown in arrow K in Fig. 7, and the coating amount of the developer of the second developing sleeve 47 [[46]] greatly excesses the coating amount of the first developing sleeve 47 [[46]] normalized with the restricting blade 58.

With such a state that the developer is mixed, not only defective image such as reduced density after duration may be formed, but also the coating amount of the second developing sleeve 46 itself becomes greatly larger than the proper amount, in the developing process of the electrostatic latent image on the photosensitive drum 41, thereby raising various problems such that blurs and overflows from the ~~developing~~ container 52 simply occur to scatter the toner in the device.

This invention is made in consideration of [[with]] the above problems. It is an object to provide a developing apparatus avoiding a developer to be coated more than the

necessary amount on a developing roller to prevent blurs and overflows out of a container form occurring and to obtain developed images with high quality.

Please amend the paragraphs starting at page 12, line 12 and ending at page 13, line 10 to read, as follows.

It is yet another object of the invention to provide a developing apparatus for developing an electrostatic image formed on an image carrier, comprising: a developing container containing a magnetic developer; a diaphragm substantially dividing ~~portioning~~ the developing container into a first chamber and a second chamber constituting a circulation path of the developer, the first chamber being disposed on an upper side of the second chamber; a developing container for containing a magnetic developer, the developing container being divided ~~portioning~~ into a first chamber and a second chamber constituting a circulation path of the developer, the first chamber being disposed on an upper side of the second chamber;

a first developing member, provided within [[with]] the first chamber, for supplying the developer to the electrostatic image on the image carrier;

a second developing member , provided within [[with]] the second chamber, for supplying the developer to the electrostatic image on the image carrier; and

a magnetic field generating means for generating a magnetic field for transferring the developer from ~~between~~ the first developing member to [[and]] the second developing member on the image carrier side, and

a restricting member for restricting entry of the developer in the developing container to a space between the first developing member and the second developing member, the restricting member being [[is]] disposed in the developer container in a non-contacting manner with [[to]] the first developing member and the second developing member. ~~member 1.~~

~~restricting member~~

Further objects of the invention will be apparent from reading the following detailed description in reference to the attached drawings.

Please amend the paragraph starting at page 14, line 2 and ending at page 14, line 4 to read, as follows.

Fig. 9 is an illustration showing another embodiment of the color image forming device ~~apparatus~~ mounting a developing apparatus according to the invention; and

Please amend the paragraph starting at page 14, line 17 and ending at page 14, line 23 to read, as follows.

An embodiment of the invention is shown ~~described~~ in Fig. 1 and Fig. 2. It is to be noted that the schematic structure of the image forming apparatus having the developing apparatus or developing device according to this embodiment is substantially the same as that of the prior art, and therefore, a detailed description is omitted. With respect to the members commonly used in the prior art, reference numbers used in the prior art are used as they are, and a detailed description is omitted.

Please amend the paragraphs starting at page 15, line 11 and ending at page 18, line 24 to read, as follows.

In this embodiment, a diaphragm 53 constituted of a part of a [[the]] developing container 52 in the developing device 42 is protruded to form a developing chamber 54 enclosed with the first developing roller 44 and a stirring chamber 55 enclosed with the second developing roller 45, respectively.

A restricting member 70 for restricting entry of the developing ~~apparatus~~ agent into an SS space 56 as a region between the first developing roller 44 and the second developing roller 45 is arranged as to continue to the diaphragm 53 where the front end of the diaphragm 53 is widened.

With this structure, in this embodiment, the developer 57 in the SS space 56 can be avoided from attracted by the magnetic force of a first magnet roller 48 and a second magnet roller 49 in the first developing roller 44 and the second developing roller 45 from operation of the restricting member 70.

Flow of the developer at the developing position is described next. In this embodiment, the cross-sectional structure of the developing device 42 along the longitudinal direction is equal to what is shown in the prior art (see Fig. 8), duplicated description is omitted. The flow of the developer 57 is basically the same as that of the prior art, which is for unifying the toner density of the developer 57 in the developing device 42 and for use [[used]] in a process developing electrostatic latent images on a [[the]] photosensitive drum 41 with the developer 57 in the developing device 42.

Herein, particularly, flow of the developer 57 with respect to the developing process is described. As shown in Fig. 2, the developer 571 in the developing chamber 54

reaches the surface of the first developing sleeve 46 in the same way as in the prior art and is carried as in a thin layer shape by means of the restricting blade 58. The developer 571 is then transferred to the second developing sleeve 47 as developing the electrostatic latent images on the surface of the photosensitive drum 41.

The developer carried on the surface of the second developing sleeve 47 performs the second development on the electrostatic latent images on the photosensitive drum 41, and enters in the stirring ~~second developing~~ chamber 55 in the developing device 42 as in a state that the toner density is lowered to merge with the developer 572, which is stirred and conveyed by a [[the]] second screw 51.

As described with reference to Fig. 1, because the front end of the diaphragm 53 is widened and because the restricting member 70 for restricting the entry of the developer into the SS space 56 located between the first developing roller 44 and the second developing roller 45 is disposed, the entry of the developer into the SS space 56 is prevented. It is to be noted that the diaphragm 53 is not formed as to completely partition between the developing chamber 54 and the stirring chamber 55, ~~chamber,~~ and the developing chamber 54 and the stirring chamber 55 are formed with a communication path permitting passage of the developer 57 around the vicinity of the opposite ends in the longitudinal direction as to constitute a circulation path of the developer 57. ~~developer.~~

The shape of the restricting member 70 is described in detail. As other features of the magnetic arrangement of the first magnet roller 48 and the second magnet roller 49 as described above, the S2 magnetic polarity 482 and S1 magnetic polarity 483, which are magnetic polarities of the same polarity adjacent to each other, are disposed at the first magnet roller 48. This is a known technology that the magnet polarities of the same

polarity are disposed in parallel so that the developer 57 does not come around from the S2 magnetic polarity side on the upstream side in the rotational direction of the first developing sleeve 46 to the S1 magnetic polarity side to separate the developer 57 from the surface of the first developing sleeve 46 at a so-called "magnetic flux zero point" 484 (shown with a single dotted line) at which no magnetic flux exists between both of the polarities.

In substantially the same way, the N2 magnetic polarity 493 and the N1 magnetic polarity 492, magnetic polarities adjacent to each other, are arranged at the second ~~developing~~ magnet roller 49, thereby rendering the magnetic flux null at the "magnetic flux zero point" 494 (shown with a single dotted line) located between the magnetic polarities to separate the developer from the surface of the second developing sleeve 47.

The restricting member 70 is desirably positioned most closely to the first developing sleeve 46 and the second developing sleeve 47 at the "magnetic flux zero point" 484, 494 described above. In this embodiment, a part of the restricting member 70 is extending to a position 71 with respect to the "magnetic flux zero point" 484, whereas extending to a position 72 with respect to the "magnetic flux zero point" 494, thereby realizing the structure described above.

This structure can form a structure that the developer 57 little enters into the space between the restricting member 70 and sleeve surface at a position of the least magnetic flux amount on the developing roller 44, 45, ~~roller,~~ so that with the synergy effect, the entering amount of the toner can be suppressed to the minimum amount to the SS space 56.

The restricting member 70, at least, may be desirably formed to have the narrowest space to the sleeve 46, 47 around the "magnetic flux zero point" 484, 494 even where not reaching the positions 71, 72 as in this embodiment.

According to an experiment, by setting the space at the closest position between the restricting member 70 described above and the sleeve to 2 mm or lower, an advantage was obtained for prevention of entry of the developer 57 to the SS space 56.

With the structure described above, even where the developing device 42 moves to the developing position in Fig. 2, the developer 57 still does not enter into the SS space 56. That is, the developer 57 deteriorated may not be re-coated on the second developing roller 45.

As described above, according to the embodiment, since the restricting member 70 is disposed for restricting the entry of the developer 57 to the region (the SS space 56) sandwiched between the first developing roller 44 and the second developing roller 45 extending adjacent to each other as well as the region of the interior of the developing container 52, the developer 57 may not enter into the SS space 56 serving as the above region, so that the developer 57 is avoided to be coated more than the necessary amount on the second developing roller 45, and so that blurs and overflows from the developing container 52 are prevented to bring developing images with higher quality.

Please amend the paragraphs starting at page 18, line 26 and ending at page 19, line 18 to read, as follows.

This invention is not limited to the rotary type image forming apparatus described above, and is applicable to an inline type image forming apparatus in which four

developing devices are arranged. It is to be noted that because the image forming apparatus shown in Fig. 9 has substantially the same structure as that of the first embodiment except the developing devices are arranged in parallel, members and apparatuses having the same functions are assigned with the same reference numbers, and a detailed description is omitted.

Fig. 10 shows a detailed structure of the developing apparatus shown in Fig. 9. The outline of the developing apparatus is as follows: the developing container is partitioned to, as upper and lower, a developing chamber 63 and a stirring chamber 64 with the diaphragm 53 (the stirring chamber is located on a lower side of the developing chamber 63 in the gravity force direction), and a magnetic developer having a non-magnetic toner and a magnetic carrier is sent to a developing chamber 63 upon pushed up by a second screw 51 at a path 67 on an end side in the longitudinal direction of the stirring chamber 64. ~~chamber.~~ It is to be noted that the drawing depicted as to overlap the developing chamber 63 with the stirring chamber 64 shows a first developing roller 44 and a second developing roller 45.

Please amend the paragraphs starting at page 19, line 22 and ending at page 20, line 12 to read, as follows.

If the agent surface of the developer is lifted up, the developer may enter into a gap between the first developing roller 44 and the second developing roller 45, ~~roller,~~ in substantially the same manner as in the first embodiment, or namely the SS space 56, [[54,]] so that consequently, the coating amount of the developer on the second developing roller 45 is raised, thereby possibly rendering defective the image density.

A restricting member 70 is formed to restrict the entry of the developer by protruding the shape of the diaphragm 53 in substantially the same manner as in the first embodiment, thereby preventing the developer from entering into the SS space 56. [[54.]]

It is to be noted that the restricting member 70 is provided across substantially the entire region along the longitudinal direction of the first and second developing rollers 44, 45 because the entry of the developer into the SS space 56 [[54]] is done at the entire region in the longitudinal direction at the developing apparatus mounted on the developing rotary described above, but in this embodiment, the restricting member 70 is preferably formed at least around the path 67 because the developing apparatus is stationally arranged.